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Scientific Areas of Integrated Review Groups (IRGs)

For a listing of the Scientific Review Officer and membership roster for each study section, click on the study section roster under the study section name within an IRG listed below or go to the [study section index](#) (study sections listed alphabetically) and click on the specified roster next to the name of the study section.

Endocrinology, Metabolism, Nutrition and Reproductive Sciences IRG [EMNR]

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- [Molecular and Cellular Endocrinology Study Section \[MCE\]](#)
- [Integrative and Clinical Endocrinology and Reproduction Study Section \[ICER\]](#)
- [Cellular, Molecular and Integrative Reproduction Study Section \[CMIR\]](#)
- [Pregnancy and Neonatology Study Section \[PN\]](#)
- [Cellular Aspects of Diabetes and Obesity Study Section \[CADO\]](#)
- [Integrative Physiology of Obesity and Diabetes Study Section \[IPOD\]](#)
- [Clinical and Integrative Diabetes and Obesity Study Section \[CIDO\]](#)
- [Integrative Nutrition and Metabolic Processes Study Section \[INMP\]](#)
- [Diabetes, Metabolism, Nutrition and Obesity Small Business SEP \(EMNR E10 B\)](#)
- [Reproductive Sciences Small Business SEP \[EMNR E11 B\]](#)
- [Endocrinology, Metabolism, Nutrition and Reproductive Sciences \(EMNR\) Integrated Review Group Fellowship Panel \[F06\]](#)

Molecular and Cellular Endocrinology Study Section [MCE]

[\[MCE Membership Roster\]](#) [\[MCE Meeting Rosters\]](#)

The Molecular and Cellular Endocrinology Study Section [MCE] reviews applications that address the molecular and cell biology of endocrine organs and their products, both hormones and growth factors. This includes the synthesis and secretion of local and circulating hormones and growth factors, polypeptides and lipid-based ligands and their mechanism of action as they interact with cell-surface and nuclear receptors to influence cell structure, function, and the regulation of gene expression in both normal and pathologic states. Specific areas covered by MCE:

- Molecular mechanisms of polypeptide, steroid/thyroid hormone action and peptide hormone synthesis, processing, secretion, signaling, and trafficking.
- Hormonal and growth factor regulation of gene expression, including DNA-binding proteins, coactivators, corepressors, and other modulators of transcription.
- Regulation of cell growth and differentiation by steroid/polypeptide hormones and growth factors.
- Functional analysis of genomic and proteomic patterns of hormone action.
- Structure-function relationship of nuclear and peptide hormone receptors.

Study Sections with most closely related areas of science listed in rank order are:

[Integrative and Clinical Endocrinology and Reproduction \[ICER\]](#)
[Cellular, Molecular and Integrative Reproduction \[CMIR\]](#)
[Cellular Aspects of Diabetes and Obesity \[CADO\]](#)
[Macromolecular Structure and Function A Study Section \[MSFA\]](#)
[Macromolecular Structure and Function B Study Section \[MSFB\]](#)
[Macromolecular Structure and Function C Study Section \[MSFC\]](#)
[Macromolecular Structure and Function D Study Section \[MSFD\]](#)
[Macromolecular Structure and Function E Study Section \[MSFE\]](#)
[Molecular and Integrative Signal Transduction \[MIST\]](#)
[Genetics of Health and Disease \[GHD\]](#)

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Integrative and Clinical Endocrinology and Reproduction Study Section [ICER]

[\[ICER Membership Roster\]](#) [\[ICER Meeting Rosters\]](#)

The Integrative and Clinical Endocrinology and Reproduction Study Section [ICER] reviews applications that focus on the physiology and pathophysiology of endocrine systems involving neurophysiological, molecular, biochemical, and cellular approaches. Emphasis is on clinical endocrine and reproductive science investigations. Specific areas covered by ICER:

- Growth, development, and disorders of endocrine organs: hypothalamic, pituitary, thyroid, and adrenal physiology, pharmacology, toxicology, and pathophysiology; mechanisms of puberty; endocrine-organ neoplasia; endocrine autoimmunity and immunobiology.
- Neuroendocrinology: reproductive neuroendocrinology including development and mechanisms of the hypothalamic-pituitary-gonadal (HPG) axis; anterior pituitary hormones; neurophysiology of hormones.
- Disorders of the female and male reproductive system: pathophysiology, mechanisms, and treatment of polycystic ovary syndrome (PCOS), endometriosis, hypogonadism, precocious puberty, pituitary adenomas, leiomyomas, and uterine fibroids.
- Endocrinology of aging: menopause; end-organ analysis; mechanisms of endocrine longevity of reproductive organs.
- Mammary gland development: maturation and physiology; hormonal control of lactation; prolactin.

Study sections with most closely related areas of similar science listed in rank order are:

[Molecular and Cellular Endocrinology \[MCE\]](#)
[Cellular, Molecular and Integrative Reproduction \[CMIR\]](#)
[Clinical and Integrative Diabetes and Obesity \[CIDO\]](#)
[Neuroendocrinology, Neuroimmunology and Behavior \[NNB\]](#)
[Tumor Cell Biology \[TCB\]](#)

Cellular, Molecular and Integrative Reproduction Study Section [CMIR]

[\[CMIR Membership Roster\]](#) [\[CMIR Meeting Rosters\]](#)

The Cellular, Molecular and Integrative Reproduction [CMIR] Study Section reviews applications concerned with the molecular, cellular, endocrine, and physiological aspects of reproductive biology in both mammalian and model organism systems. Emphasis is on an integrative experimental approach to elucidate basic mechanisms controlling fertility. Specific areas covered by CMIR:

- Differentiation and maturation of male and female germ cells including the cellular, molecular, endocrine, and epigenetic mechanisms involved in spermatogenesis and oogenesis; also included is meiosis and reproductive aging in both male and female gametes.
- Fertilization including sperm capacitation, sperm-zona pellucida binding, and sperm-egg fusion; also included are artificial reproductive techniques, cryopreservation of gametes and pre-implantation embryos, male and female infertility, and identification and role of possible contraceptive targets.
- Embryo implantation including uterine receptivity and embryo/maternal tissue interactions; also included is early embryo development encompassing zygotic gene activation and epigenetic/imprinting mechanisms.
- Development and function of the male and female gonads (testis and ovary), and their respective reproductive tracts; also included is the endocrine regulation in these tissues, soma-germ cell interactions, and the effect of xenobiotics and environmental factors on male and female reproductive processes.
- Stem cell biology: Germ stem cells including stem cell niches in the gonads and cellular and molecular processes involved in sex determination; also embryonic stem cells including nuclear reprogramming, and epigenetic mechanisms.

Study sections with most closely related areas of similar science listed in rank order are:

[Development - 1 \[DEV1\]](#)

[Integrative and Clinical Endocrinology and Reproduction \[ICER\]](#)

[Pregnancy and Neonatology \[PN\]](#)

[Molecular and Cellular Endocrinology \[MCE\]](#)

[Molecular Genetics B \[MGB\]](#)

Pregnancy and Neonatology Study Section [PN]

[\[PN Membership Roster\]](#) [\[PN Meeting Rosters\]](#)

The Pregnancy and Neonatology Study Section [PN] reviews applications related to the physiology of pregnancy and placental development, parturition, clinical obstetrics, maternal/ fetal medicine, and fetal/neonatal development utilizing molecular/genetic, cellular, whole-organ/animal/subject, and biochemical methodologies. Emphasis is on clinical and basic models to understand pregnancy progression and its disorders. Specific areas covered by PN:

- Placental development and maintenance: trophoblast invasion and differentiation; endocrinology and hormone production; transport functions; the development of utero-placental blood flow; maternal/fetal immune-tolerance mechanisms; hypoxia.
- Parturition: cervical ripening; myometrial contractility; production of factors leading to labor; obstructive labor; clinical obstetrics.
- Complications of pregnancy: preeclampsia; gestational diabetes; maternal metabolic changes and obesity; fetal origins of disease; spontaneous abortion; pre-term labor; recurrent pregnancy loss; diabetic embryopathy; intra-uterine growth restriction.
- Fetal biology: growth, development, and metabolism; fetal physiology, pharmacology, toxicology, and neurobiology; fetal diseases; in utero infection; maternal-fetal interactions, fetal microchimerism.
- Neonatology: transition to extra-uterine life; neonatal physiology, endocrinology, and pathophysiology; jaundice; complications of low birthweight; SIDS.

Study sections with most closely related areas of similar science listed in rank order are:

[Cellular, Molecular and Integrative Reproduction \[CMIR\]](#)

[Integrative and Clinical Endocrinology and Reproduction \[ICER\]](#)

[Integrative Nutrition and Metabolic Processes \[INMP\]](#)

[Cardiovascular Differentiation and Development \[CDD\]](#)

[Development-1 \[DEV1\]](#)

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Cellular Aspects of Diabetes and Obesity Study Section [CADO]

[\[CADO Membership Roster\]](#) [\[CADO Meeting Rosters\]](#)

The Cellular Aspects of Diabetes and Obesity [CADO] Study Section reviews applications concerned with all aspects of metabolic regulation related to type 1 and type 2 diabetes and diabetes. Specific areas covered by CADO are:

- Differentiation, development, growth and function of pancreatic islets; beta cell replacement and stem cell biology.
- Differentiation and function of adipocytes; structure and function of adipocyte-secreted biologically active molecules; signal transduction mechanisms controlling adipocyte gene expression and cell function.
- Insulin biosynthesis, trafficking, and secretion; insulin action; mechanisms of insulin signaling; glucose transport; downstream signaling pathways in insulin action, including the actions of scaffold proteins, phospholipids, kinases, and phosphatases.
- Islet hormones and novel factors that coordinate central and peripheral communication of nutrient status.
- Genetics of obesity and diabetes; analysis of the functional consequences of specific genetic alterations concerning obesity and/or diabetes.

Study sections with most closely related areas of similar science listed in rank order are:

[Molecular and Cellular Endocrinology \[MCE\]](#)

[Integrative Physiology of Obesity and Diabetes \[IPOD\]](#)

[Clinical and Integrative Diabetes and Obesity \[CIDO\]](#)

[Hypersensitivity, Autoimmune, and Immune-mediated Diseases \[HAI\]](#)

[Membrane Biology and Protein Processing \[MBPP\]](#)

Integrative Physiology of Obesity and Diabetes Study Section [IPOD]

[\[IPOD Membership Roster\]](#) [\[IPOD Meeting Rosters\]](#)

The Integrative Physiology of Obesity and Diabetes [IPOD] Study Section reviews applications dealing with etiology and treatment of metabolic disturbances associated with obesity and diabetes, involving endocrinological, molecular/genetic, biochemical, neuroanatomical, systems biology, dietary, metabolic and integrative physiological approaches. Emphasis is on integrative systems approaches to elucidating peripheral and central regulatory pathways of carbohydrate, lipid and energy homeostasis. Specific areas covered by IPOD:

- Peripheral metabolic regulation: analysis of intermediary metabolic pathways and mitochondrial function in adipose tissue, liver and skeletal muscle related to diabetes and obesity; nutrient storage and release and communication among these three tissues; endocrine signaling among these tissues and their communication with the brain; effects of exercise and diet on metabolic processes in adipose tissue, liver and skeletal muscle.
- Central metabolic regulation: analysis of neural regulatory pathways involved in control of body composition and energy and metabolic homeostasis; central actions of peripheral signaling molecules, such as leptin and insulin; neuroanatomical, neurodevelopmental, and neuroendocrinological analysis of circuits controlling food intake, energy expenditure and peripheral metabolism.
- Cytokine, adipokines and inflammatory regulation of metabolic and energy control: effects on insulin action in adipose, liver, muscle and neural processes; cellular and molecular responses to changes in inflammation, cytokine and adipokines levels.
- Dietary and exercise influences on metabolic regulation: use of whole body metabolic and body composition analysis to monitor changes in response to diet and exercise, including stable isotope studies, DEXA, glycemic clamps, MRI analysis of metabolic flux; the effects of perinatal diet and intrauterine growth on subsequent development of diabetes and obesity in adults and the role of epigenetics in these processes.
- Hypoglycemia and counter regulatory responses: glucose sensing and neural control of counter regulatory responses; glucoregulation of neuronal activity in brain areas involved in metabolic and energy control; analysis of insulin and leptin action in the brain.

Study sections with most closely related areas of similar science listed in rank order are:

[Clinical and Integrative Diabetes and Obesity \[CIDO\]](#)

[Cellular Aspects of Diabetes and Obesity \[CADO\]](#)

[Integrative Nutrition and Metabolic Processes \[INMP\]](#)

[Neuroendocrinology, Neuroimmunology and Behavior \[NNB\]](#)

[Skeletal Muscle Biology and Exercise Physiology \[SMEP\]](#)

Clinical and Integrative Diabetes and Obesity Study Section [CIDO]

[\[CIDO Membership Roster\]](#) [\[CIDO Meeting Rosters\]](#)

The Clinical and Integrative Diabetes and Obesity [CIDO] study section reviews clinical (patient oriented) research applications related to the prevention, pathogenesis and treatment of diabetes and/or obesity. Specific areas covered by CIDO:

- The regulation of glucose, fat, and protein metabolism in the whole body and specific organs (e.g., liver, skeletal muscle, adipose, brain) in the setting of diabetes or obesity. Studies may also involve the effects of substrates on hormone action and cytokines that mediate energy and regulate nutrient homeostasis.
- Energy expenditure, thermogenesis, physical activity, and exercise in the context of the prevention, pathogenesis or treatment of human obesity or diabetes.
- Body composition, the mechanisms which regulate it, and the metabolic consequences of distribution patterns of adipose tissue.
- Prevention and treatment of obesity and diabetes utilizing lifestyle, pharmacologic or surgical interventions.
- Central nervous system regulation of energy intake, energy expenditure, and nutrient partitioning.
- Genomic approaches that are designed to address questions regarding physiology or pathogenic mechanisms of diabetes and/or obesity.

Study sections with most closely related areas of similar science listed in rank order are:

[Integrative Physiology of Obesity and Diabetes \[IPOD\]](#)

[Psychosocial Risk and Disease Prevention \[PRDP\]](#)

[Kidney, Nutrition, Obesity and Diabetes \[KNOD\]](#)

[Integrative Nutrition and Metabolic Processes \[INMP\]](#)

[Genetics of Health and Disease \[GHD\]](#)

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Integrative Nutrition and Metabolic Processes Study Section [INMP]

[\[INMP Membership Roster\]](#) [\[INMP Meeting Rosters\]](#)

The Integrative Nutrition and Metabolic Processes Study Section [INMP] reviews applications concerned with the integration of molecular events, gene responses, metabolic processes, and physiological functions. These areas include macronutrients (carbohydrate, protein and lipid or fat), micronutrients (vitamins and minerals) and other food components. Emphasis is on clinically relevant research using cell culture systems, genetically manipulated animals, human studies to understand complications of these processes and their influence on disease. Specific areas covered by INMP:

- Macronutrients: carbohydrate, proteins, amino acids, lipids, and their metabolites, mechanisms of their synthesis, degradation, metabolism, utilization, and inter-organ flux and turnover; the role of cholesterol, lipoproteins, and fatty acids in physiological and pathophysiological processes; molecular and cellular mechanisms underlying inherited disorders of metabolism.
- Micronutrients: vitamins (water-soluble and fat-soluble) requirement, utilization, metabolism, and function including genotype-phenotype relationships of vitamins metabolism and brain dysfunction and cognition; mineral elements metabolism including absorption, transport, metabolism, and function of macro- and trace-minerals; minerals/elements in neurochemistry and cognition, the acute phase response, immune function, and cellular development.
- Other food components: the role of carotenoids, flavonoids, polyphenols and phytonutrients on metabolic processes, cellular function, and gene expression.
- Oxidative stress and antioxidants: effects of nutrients, other food components, and metabolic substrates on the generation of reactive oxygen and nitrogen species, disease processes, antioxidant defense.
- Differentiation, pre-cancer, and immune response: effects of nutrients and other food components on normal and abnormal cell differentiation, proliferation, and immune functions or responses in animal models or human clinical trials.

Study sections with most closely related areas of similar science listed in rank order are:

[Integrative Physiology of Obesity and Diabetes \[IPOD\]](#)

[Clinical and Integrative Gastrointestinal Pathology \[CIGP\]](#)

[Atherosclerosis and Inflammation of the Cardiovascular System \[AICS\]](#)

[Skeletal Biology Development and Disease \[SBDD\]](#)

[Pregnancy and Neonatology \[PN\]](#)

[Kidney, Nutrition, Obesity and Diabetes \[KNOD\]](#)

[Chemo/Dietary Prevention \[CDP\]](#)

Diabetes, Metabolism, Nutrition and Obesity Small Business SEP (EMNR E10 B)

[\[EMNR \(10\) B Roster\]](#)

The EMNR Small Business SEP [EMNR (10)] considers SBIR/STTR standing SEP reviews applications in areas concerned with the endocrine, metabolic and nutritional basis of diabetes and obesity. Specifically neuroendocrine basis of energy expenditure and weight management, pathogenesis of obesity and diabetes and their management utilizing new and improved therapeutic strategies, bioengineering approaches in monitoring metabolic and nutritional biomarkers. In general EMNR E10 covers science range of IPOD, INMP, CADO and CIDO study sections.

- Energy expenditure, thermogenesis, physical activity, and exercise in the context of the pathogenesis or treatment of obesity and diabetes. Nutrient and dietary intervention in the treatment of these metabolic and endocrine disorders.
- Adipocyte functions, including: nutrient storage and release, and communication with other organs and tissues.
- Neuroendocrinology and pharmacological interventions in metabolic disorders.
- Biosensor (e.g., glucose sensors etc.) to effect continuous glucose monitoring for effective treatment of diabetes utilizing micro and nanosensor technologies. Drug and nutrient delivery across cell and tissue systems.
- Differentiation, development, growth, and function of pancreatic islets. Beta cell viability and methods at optimization for use in islet transplantation and cell based therapies

Small Business SEP panels of IRGs with most closely related areas of similar science listed in rank order are:

[Digestive, Kidney and Urological Systems IRG](#)

[Bioengineering Sciences and Technologies IRG](#)

[Risk, Prevention, and Health Behavior IRG](#)

[Musculoskeletal, Oral and Skin Sciences IRG](#)

[Integrative, Functional, and Cognitive Neuroscience IRG](#)

Reproductive Sciences Small Business SEP [EMNR E11 B]

[\[EMNR \(11\) B Roster\]](#)

The EMNR Small Business SEP [EMNR (11)] SBIR/STTR standing SEP reviews applications in areas concerned with the emerging technologies and methodologies across all aspects of general endocrinology, pregnancy, reproductive and developmental physiology; these new and improved technologies and methodologies involve utility of molecular, cellular biological and bioengineering tools utilizing micro and nanotechnology in various reproductive processes including assisted reproductive processes. In general EMNR E11 covers science range of CMIR, MCE, ICER and PN study sections.

- Endocrinology and neuroendocrinology of male and female reproductive tract.
- Estrogen receptors and endocrine disruptors, toxicology and hormonal treatment.
- Assisted reproductive technologies (ART) and development of devices related to reproduction.
- Studies of sperm, oocyte and fertilization and male contraceptives.
- Disorders of pregnancy and their treatment and study of female contraceptives.
- Implantation and pharmacological interventions
- Pediatric endocrinology including pediatric neuroendocrinology related to growth, development and lactation.

Small Business SEP panels of IRGs with most closely related areas of similar science listed in rank order are:

[Biology of Development and Aging IRG](#)

[With the Bioengineering Sciences and Technologies IRG](#)

[Integrative, Functional, and Cognitive Neuroscience IRG](#)

[Musculoskeletal, Oral and Skin Sciences IRG](#)

[Oncology 1 - Basic Translational IRG](#)

[Oncology 2 - Translational Clinical IRG](#)

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Endocrinology, Metabolism, Nutrition and Reproductive Sciences (EMNR) Integrated Review Group Fellowship Panel [F06]

[\[F06 Roster\]](#)

EMNR Integrated Review Group Fellowship Panel [F06] reviews fellowship applications in areas of endocrinology, metabolism, nutrition, and all aspects of reproductive sciences. Included are applications for a broad spectrum of research related to all aspects of general endocrinology, gametogenesis and reproductive physiology, pregnancy and lactation, and nutrient metabolism. In general F06 covers science range of all EMNR SRGs. Specific areas covered by F06 panel:

- Endocrine systems associated with the reproductive processes. Physiological, pathophysiological, and molecular and cell biological processes involving hypothalamic, pituitary, pineal, thyroid, adrenal, gonadal, and pancreatic hormones.
- Gametogenesis, fertilization, embryology and development from the early stages of gonad development and through implantation of the embryo, pregnancy, and parturition, including neonatal development and maternal/fetal physiology.
- Nutrient and energy metabolism utilizing molecular, cell biological and genetic tools and also translational studies on type 2 diabetes and obesity.
- Adipocyte function, including nutrient storage and release, and communication with other endocrine organs and tissues.
- Differentiation, development, growth, and function of pancreatic islets.

Fellowship Panels with most closely related areas of similar science listed in rank order are:

Cell Biology and Development (F05)
Physiology and Pathobiology of Organ Systems (F10)
Oncological Sciences (F09)
Pancreatic beta cell biology (F07)
Behavioral Neuroscience (F02A)

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